



US 20160302144A1

(19) **United States**

(12) **Patent Application Publication**  
**KASSLIN et al.**

(10) **Pub. No.: US 2016/0302144 A1**

(43) **Pub. Date: Oct. 13, 2016**

(54) **METHOD, APPARATUS, AND COMPUTER  
PROGRAM PRODUCT FOR EFFICIENT USE  
OF FREQUENCY BANDS AND CHANNELS  
IN WIRELESS ENVIRONMENT**

**Publication Classification**

(51) **Int. Cl.**  
*H04W 48/20* (2006.01)  
*H04W 72/04* (2006.01)

(52) **U.S. Cl.**  
CPC ..... *H04W 48/20* (2013.01); *H04W 72/0486*  
(2013.01); *H04W 84/12* (2013.01)

(71) Applicant: **Nokia Technologies Oy**, Espoo (FI)

(72) Inventors: **Mika KASSLIN**, Espoo (FI); **Janne  
MARIN**, Espoo (FI)

(73) Assignee: **Nokia Technologies Oy**, Espoo (FI)

(21) Appl. No.: **15/040,032**

(22) Filed: **Feb. 10, 2016**

**Related U.S. Application Data**

(60) Provisional application No. 62/144,505, filed on Apr.  
8, 2015.

(57) **ABSTRACT**

A method to provide interoperable mechanisms for efficient use of frequency bands and channels in Wi-Fi networks, including receiving, by an access point device, a wireless request message from a wireless device, requesting information on candidate wireless networks; determining, by the access point device, whether the wireless device is associated with the access point device; and composing, by the access point device, a forwarding message to be transmitted by the access point device to a server, and including in the forwarding message an indication that the wireless device is associated with the access point device, if the wireless device is associated with the access point device.

**ACCESS POINT (AP) 110A**

**500**

